BULLETIN 430

Meat

COOPERATIVE EXTENSION SERVICE
THE OHIO STATE UNIVERSITY

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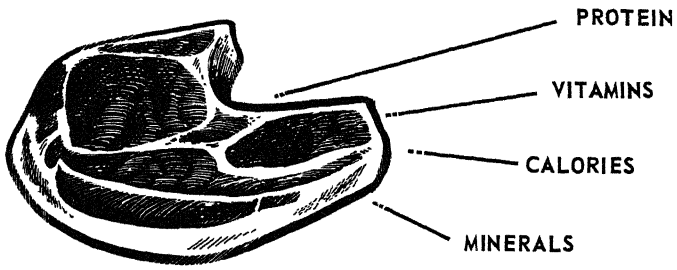
Meat

Meat is prized for its flavor as well as its food value. Meat gives satiety—a feeling of satisfaction. Usually the meat for dinner is selected first and other foods in the meal are chosen to "go well" with it.

Protein

Most families like to serve meat often although it may take a large part of the family food dollar. Meat, milk, cheese, eggs, poultry, and fish are food sources high in animal protein which can provide the essential amino acids. Dry beans, peas, and nuts supply considerable protein but it is of a lower quality, i.e. one or more of the essential amino acids occur in unfavorable proportions.



However, when these "incomplete" protein foods are supplemented in the same meal with meat or other animal protein the body can use the "incomplete" proteins more efficiently. Protein is used to build and repair body tissue. It helps form nitrogen-containing substances which are essential to enzymes, some hormones and to other body functions. Protein also serves in body regulating capacities and can be used for energy.

For adults a minimum of four ounces of meat or an equivalent in meat alternates is recommended in the present daily food plan to provide about 30 grams of protein. Thirty grams is equal to about one ounce or two tablespoons. Meat or other animal protein at each meal is recommended for effective use of protein in the body.

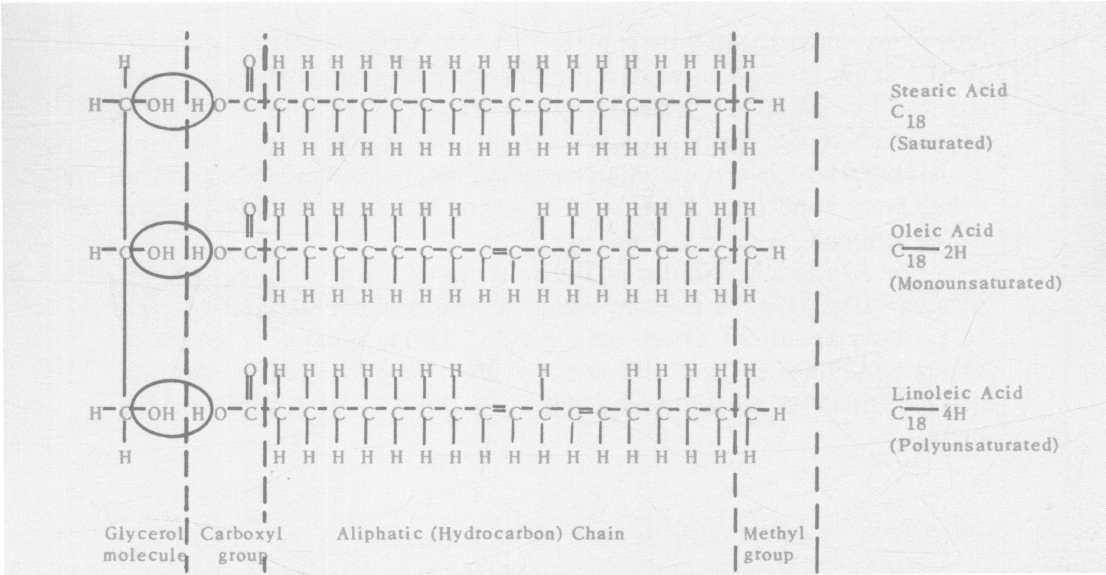
Protein Content of Meat and Meat Substitutes

Food	Size of Serving	Grams Protein	Approx. Oz. Protein
Beef, veal, lamb, pork, poultry lean, cooked without bone	2 oz.	15	.52
Bacon	2 slices	4	.14
Dry beans and peas, cooked	1/2 cup	8	.28
Eggs	1 egg	6	.21
Fish, cooked without bone	2 oz.	15	.52
Frankfurters	2 oz.	8	.28
Luncheon meat	2 oz.	9	.32
Peanut butter	2 T.	8	.28

Fat

Meat provides fat in varying amounts—pork, fat poultry and fish being richest. Fats are concentrated sources of energy; weight for weight they are 2.25 times as energy-producing as proteins or carbohydrates. Inside the human body, deposits of fat insulate the tissues against temperature changes or mechanical shock. While the digestion of all fats is almost 98 per cent complete, it must be noted that fats tend to delay the emptying of the stomach after a meal thus making a person feel "full." This is an advantage to most active individuals who do not want to be hungry too soon.

Certain fats carry essential fat-soluble vitamins A, D, and E; thus the digestion and absorption of the fats make possible the absorption of these vitamins.



The fat molecules are made up of glycerol and three fatty acids. The acids differ from fat to fat, especially in the size of the fatty acids and how completely they are saturated with hydrogen. Plant fats in general have fatty acids (eg. oleic acid) which are less completely saturated than those in animal fats (eg. stearic acid). Another of these acids which is abundant in corn, safflower, and cottonseed oil is linoleic acid. This particular acid is important in human nutrition because it is necessary for health and cannot be made by the tissues of man. Oils differ from solid fats only in having smaller fatty acids and in being more unsaturated with respect to hydrogen.

Fatty Acids in Some Animal Products
Grams per 100 Grams of Total Fatty Acids

Meat	Saturated Total	Unsaturated Total	Linoleic
Bacon	33	67	10
Pork cuts	38	62	9
Pork liver	36	64	5
Lard	40	60	11
Beef	50	50	2
Lamb	59	41	2

Cholesterol, like fats, belongs to the class of food materials called lipids. Some workers have tried to correlate a high fat intake with a high blood content of cholesterol and this with the occurrence of the disease atherosclerosis.

Cholesterol is found deposited in the walls of arteries in atherosclerosis, with the result that elasticity of the arteries is reduced.

The relationship has not been conclusively demonstrated. However, it is known that it is not possible to control the cholesterol available to the body by eliminating cholesterol-containing foods such as meat, milk, and eggs because the body can make an abundance of this lipid from any food eaten.

Since some fat makes food more palatable and meals more satisfying, it would be undesirable to eliminate fat from the diet. However, some authorities recommend that people try to lower their fat intake from the 44 per cent of their caloric intake to about 25 to 35 per cent. A lowered fat intake might help some problems of overweight and at the same time might preserve the elasticity of some arteries.

Caloric Content of Meat

Meat	Size of Serving	Calories
Bacon, broiled or fried crisp	2 slices	95
Beef trimmed to retail basis*		
Beef, cuts braised, simmered or pot roasted		
Lean and fat	3 oz.	245
Lean only	2.5 oz.	140
Hamburger, broiled		
Market ground	3 oz.	245
Ground lean	3 oz.	185
Roast, relatively fat such as rib		
Lean and fat	3 oz.	390
Lean only	1.8 oz.	120
Steak, broiled such as sirloin		
Lean and fat	3 oz.	330
Lean only	2 oz.	115
Lamb — Chop	4.8 oz.	405
Veal — Leg roast, lean and fat	3 oz.	235
Roast, lean and fat	3 oz.	305
Pork — Ham, smoked, lean and fat	3 oz.	290
Pork chop	3.5 oz.	260
Roast, lean and fat	3 oz.	310
Sausage — Frankfurter	2 oz.	155
Bologna	2 slices	173

*Outer layer of fat on the cut was removed to within approximately ½ inch of the lean. Deposits of fat within the cut were not removed.

Other Nutrients

Iron, riboflavin, thiamine, and niacin are other valuable nutrients available from meat. Lean meat and variety meat such as liver, heart, and kidney are important sources of phosphorus and of iron—a mineral used for building red blood cells. Lean pork is one of the richest food sources of thiamine. Variety meat provides a considerable amount of thiamine and is also rich in riboflavin.

Lean meat and variety meat are leading contributors of niacin. Thiamine, riboflavin, and niacin are three of ten B-complex vitamins. These function together in the body's enzyme systems which are involved in the utilization and storage of energy and in the normal functioning of body processes. Thiamine appears to be related to maintenance of appetite, muscle tone and healthy mental attitude.

Liver is the only meat that is a rich source of vitamin A. Meat also provides amounts of trace minerals such as zinc, cobalt, and manganese. The recommended servings of protein-rich foods as well as other foods can be fitted into a pattern for three meals a day. The following is a useful guide for planning nutritionally adequate meals for the family.

BREAKFAST

Fruit or fruit juice
(preferably citrus or one high in vitamin C)
Cereal and milk and/or other protein-rich food
Bread — butter or margarine
Milk
Other beverage, if desired

LUNCH OR SUPPER

Protein-rich food (meat, fish, poultry, eggs, cheese or an alternate)
Vegetable or fruit or both
Bread — butter or margarine
Dessert, if desired
Milk

DINNER

Protein-rich food (meat, fish, poultry, eggs, cheese, or an alternate)
Two vegetables — potato or other starchy vegetable
— a dark green or yellow vegetable
Bread, butter
Dessert
Milk
Other beverage, if desired

Fact or Fallacy

Common fallacies regarding meat in the diet and facts that refute them are given below.

Fallacy: Pork liver is less nutritious than beef liver.

Fact: Pork and beef liver contain valuable mineral and vitamins and both are nutritious. Pork liver contains more iron than beef liver, but beef liver contains more vitamin A than pork liver.

Fallacy: Omit meat, eggs, and milk from diet to cure arthritis.

Fact: There is no evidence that any food will either cause or cure the disease.

Fallacy: The nutritive value of meat from cattle raised on inferior land is poor.

Fact: The important nutrients in meat are not influenced by the feed of the animal.

Fallacy: Meat burns its own calories.

Fact: The calories from meat are utilized by the body the same as those of other foods. High protein foods build and maintain tissues and provide, as carbohydrates and fats do, body warmth and energy.

Fallacy: Rare roast beef and steaks are more nutritious and more effective in the treatment of anemia than is well-done meat.

Fact: Properly prepared meat, cooked at moderate temperatures is very similar in nutritive value, whether it is rare, medium, or well done.

Meat Inspection

All meat shipped from one state to another **must** be examined by federal inspectors under the Meat Inspection Act. The animal is inspected just before slaughter, and the glands, viscera, and carcass after slaughter. Animals not meeting requirements are condemned. Sanitary condition of the plant, including the employees, are inspected, too.

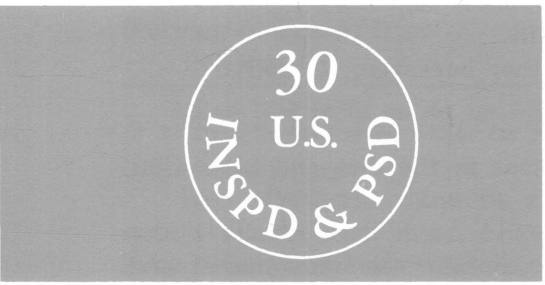


Figure 1. U.S.D.A. Inspection Stamp

All wholesale carcass cuts inspected and passed as wholesome food are marked with a round purple stamp (Figure 1). This stamp assures the consumer that the meat was wholesome when it was slaughtered and that it was further handled under sanitary conditions.

Meat sold in Ohio that is not federally inspected may or may not have been inspected within the state. This depends on local Board of Health regulations as Ohio has no state meat inspection law.

Processed meat products moving in interstate commerce also are produced under the supervision of the Meat Inspection Division of the Bureau of Animal Industry. This division approves sausage and canned meat recipes; wholesome ingredients must be used, and the recipe must be followed. Canned, processed, or

packaged meat labels must be approved. Label requirements include a descriptive name of the product, a list of ingredients in decreasing order of amounts, net weight, and name and address of manufacturer or distributor.

Ohio regulations control some of the meat available. For example "ground beef," "ground steak," "chopped beef," "chopped steak," and other such meat are to be made from fresh or fresh frozen beef. Total beef fat, or suet, content may not exceed 20 per cent. Water, cereal, or other substances that change the color, character, or appearance of the product may not be added.

"Hamburger" is also made from fresh or fresh frozen beef. However, beef fat or suet content limits are higher—up to 33 per cent. Water, cereal, or other substances that may change color, character, or appearance can not be added.

The cost of Federal Meat Inspection is paid for through the general revenue fund supplied by taxes. This service is estimated to cost about 6 cents per person.

Meat Grading

Many food shoppers find it difficult to select the particular quality of meat they want. Purchase of a certain brand, or meat that carries an official grade mark may be the solution. The U.S. Department of Agriculture offers a shopper's guide in the form of U.S. Grades.

U.S. Grades are preceeded by the letters "U.S." and are enenclosed in a shield-shaped mark. (Figure 2). Buying graded meat does not imply buying only the best. Grades offer a choice of quality so that the one to fit the use can be selected.

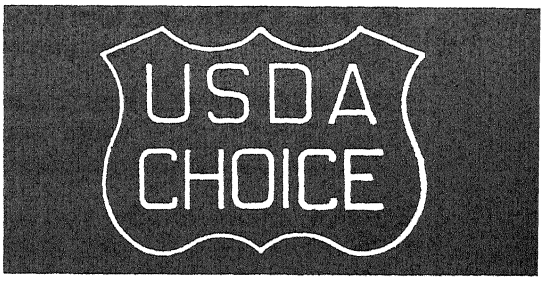


Figure 2. U. S. Grade Stamp

The U.S.D.A. Marketing Service is responsible for developing standards for grades. The use of U.S. Grades is strictly voluntary. The food processor, handler, or producer must request grading service, if he wants it, and must pay a fee for it.

Meat is graded in carcass form to facilitate marketing. The grader uses a roller stamp which leaves an imprint of the grade name on most retail cuts. Harmless purple vegetable coloring is used for stamping. All meat that is federally graded must first be inspected.

Beef, veal, and lamb and mutton have federal grades. No federally graded pork is available to consumers at the present time. Grades may, however, be used in the sale of live hogs.

U.S.D.A. Grades for Beef, Veal, and Lamb

Product	1st Grade	2nd Grade	3rd Grade	4th Grade	5th Grade
Beef	Prime	Choice	Good	Standard	Commercial*
Veal	Prime	Choice	Good	Standard	Utility**
Lamb	Prime	Choice	Good	Utility	Cull

*Three lowest grades are Utility, Cutter, and Canner.

**Lowest grade is Cull.

Source: *Shoppers Guide to U. S. Grades for Food,* Home and Garden Bulletin No. 58, U. S. Department of Agriculture, September, 1958.

Consumers may expect these characteristics in the top four grades of beef:

U.S.D.A. Prime—the lean is highly marbled; usually very tender; outside fat may be excessive.

U.S.D.A. Choice—the lean is moderately marbled; generally tender; amount of outside fat is variable.

U.S.D.A. Good—the lean contains some marbling; tenderness is more variable than for Prime and Choice; outside fat may be limited.

U.S.D.A. Standard—the lean contains little or no marbling; tenderness is quite variable; very little outside fat.

Grades are based on an evaluation of three factors:

- conformation — general body proportions and ratio of meat to bone.
- finish — amount, character, and distribution of fat.
- quality — texture and color of lean, amount and distribution of intramuscular fat (marbling), and maturity as indicated by color and character of bones.

The relative importance of the three factors varies from grade to grade. For example, the "prime" and "choice" grades emphasize quality, while in the "good" grade, conformation is more important. The finish requirement varies little between grades.

Hotels, restaurants and individual consumers who want a quality steak or roast will choose a "prime" or "choice" grade. On the other hand, the consumer who is more interested in getting the most meat for the money will find "good" grades more suited to her needs.

All three factors are combined to form one grade. The carcass may not receive the same grade on each of the factors. Hence, it is often necessary to balance them to arrive at a final grade. For example, the **quality** of the animal may be "prime" grade, while the **conformation** may be only "standard." The final grade that appears at the retail market would be choice.

Example of How Grade Factors are Balanced

Quality	Conformation	Final Grade
Choice	Prime	Choice
Choice	Choice	Choice
Choice	Good	Choice
Prime	Standard	Choice
Prime	Good	Choice

In choice beef, the quality grade may be higher, but never lower, than the final grade.

This balancing of grade factors may explain why a consumer may find a lot of variation from one time to the next within the same grade.

Meat grades are revised as new information from research indicates changes are needed. Revisions are brought about as a result of expression by all interested people — producers, processors, retailers, and consumers.

Meat Quality

For the consumer, meat quality is one of the most difficult things to recognize and to select with confidence. Quality in its very broadest sense is the "eatability" of meat. This "eatability" has many factors. Let's think of quality as a combination of characteristics that are important to us. These are tenderness, flavor, juiciness, leanness, and attractiveness or "eye appeal." Each of these factors has a different relative value as a guide to meat quality. In general, these are the qualities that the "average" consumer would look for in meat that she buys. Because there is no average consumer, we find that individual demand varies. This, fortunately, provides a market for the various carcasses of meat that are produced. Let us consider these attributes of quality on an individual basis.

Tenderness

Consumer studies have indicated that tenderness is the most important attribute for acceptance of beef and while of no less importance it appears to be generally less critical for veal, lamb and pork. Although tenderness can be altered by methods of cooking, aging, and enzyme treatment, there is still a demand for naturally tender meat. Factors such as conformation, maturity, finish, marbling, muscle structure, and perhaps other external influences such as exercise and feeding also influence tenderness.

Conformation. Conformation is the general shape of the animal and is one of the factors involved in grading. Its relationship to tenderness is not clear. Current research seems to indicate that the relationship between the thickness and the meatiness of an animal and the tenderness of the meat that it produces is not especially high.

Maturity. Maturity refers to the age of the animal producing the meat. Research shows that younger, more immature animals produce more tender meat than older animals. But determining maturity at the market place is a very difficult task! Maturity is involved in choosing the final grade of a cut of meat but it must be determined in the carcass; hence, the individual consumer has little control over the factor of maturity. In other words, fast-growing animals tend to reach market weight at a

younger age and, will produce more tender cuts of meat than older, slow-growing animals that reach market weight at an older age.

Finish. Finish refers to the fat covering the outside of the animal carcasses or to degree of fatness. Today's consumer frowns upon excess fat on meat cuts. For a long time, it has been said that it is necessary to have a great deal of finish in order to have tenderness. Research indicates that the amount of finish has little to do with tenderness. Tenderness ratings can be very high for carcasses and cuts with a minimum amount of finish, or they can be very low for carcasses and cuts with a high degree of finish. Finish is more closely associated with flavor and juiciness than with tenderness.

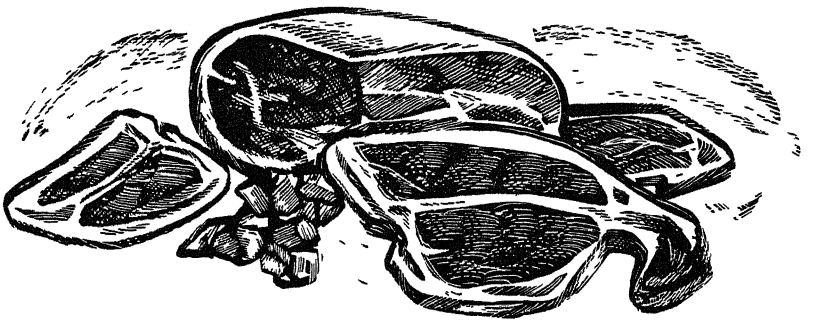
Marbling. Marbling is the amount and distribution of intramuscular fat. It is the fat that is dispersed throughout the lean meat. This has been quite generally accepted by the meat trade and consumers alike as an indicator of tenderness. There is increasing evidence that the relationship between marbling and tenderness is quite low. Marbling, like finish, probably is related more closely to juiciness and to flavor than to tenderness.

Muscle structure. This means texture in meat. Studies indicate that the structure of the muscle is not highly related to tenderness.

Summary: (1) The factor that influences tenderness to the greatest degree is maturity. (2) Conformation is not highly related to tenderness. (3) Finish and marbling are more closely related to juiciness and flavor than to tenderness. (4) Muscle structure is not highly important in tenderness.

Flavor

Undoubtedly, flavor is the most satisfying factor of meat. Due to personal likes and dislikes, a wide range of flavors are acceptable. Generally, flavor becomes more pronounced as an animal matures. Recent work indicates that much maturing must take place before important flavor differences are noted. Flavor research shows that the meaty flavor and aroma characteristic of a meat is associated with the lean tissues. Other work reveals that the characteristic flavor difference between pork, beef, and lamb



may be associated with the fatty portion. Hence, from the standpoint of quality in meat, flavor seems to be associated with maturity and with the amount of fat that is present in the meat. An excess of fat, however, offers no important contribution to flavor. There are many factors that contribute to off-flavors in meat. The subject is too comprehensive for this discussion, but such things as mutton flavor, feed flavors, barnyard flavors, etc., lower the quality of meat.

Juiciness

Juiciness adds to the over-all acceptability or quality of meat. Yet, separation of juiciness from other palatability characteristics is difficult. Research has shown that marbling contributes more to juiciness than most other observable quality characteristics. On the other hand, juiciness is a subjective measure—a cut of meat may appear juicy to one consumer while it may appear dry to another. Certainly the method of preparation influences juiciness.

Leanness

Today's consumer looks for a lean cut of meat—a high proportion of lean meat to fat and bone. Selecting meat for leanness alone may leave a very unsatisfied consumer from the standpoint of eating characteristics. It is very difficult to differentiate between leanness and attractiveness. The well informed consumer will select meat for tenderness, flavor, and juiciness and then, within this quality range, will select for leanness. Selecting for leanness alone is unwise.

Attractiveness

Color is probably the most important factor in attractiveness. Discolored or two-toned, watery meat is not attractive. The relationship of conformation to attractiveness is virtually unknown. Whether a certain shape or muscle thickness is important from the standpoint of the appearance is not known. The role of attractiveness of meat in quality is simply one of selection.

Summary

Quality represents the "eatability" of a cut of meat. It is influenced by the tenderness, flavor, juiciness, leanness and attractiveness of the meat. These factors are in turn influenced by other factors such as maturity, finish, marbling, conformation and muscle structure. All these together represent quality. But meat that provides eating satisfaction is high quality meat, regardless of the name or grade that it carries.

Selection of Meat

Satisfaction from eating meat comes with the ability to recognize and select kind, cut, and quality for use. In 1962 each person in the United States ate an estimated 149.4 pounds of meat, retail weight. Using carcass weight, this would be about 163.7 pounds. The amount consumed included 75.4 pounds of beef and veal, 59.5 pounds of pork, 4.5 pounds of lamb and mutton, and about 10 pounds of variety meat. Using carcass weight, values per capita consumption in 1962 included 94.6 pounds of beef and veal, 64 pounds of pork, and 5.1 pounds of lamb and mutton.

Recognizing Quality

The food shopper can look for many signs of quality in meat, whether or not a U.S. Grade is stamped on the cut. Brand names used by packers, wholesalers and retailers often indicate quality. Become acquainted with these names and inspect the meat yourself.

For high quality meat look for:

Beef

high proportion of lean to bone and fat
firm, fine textured lean
bright red color
marbling
red, porous bones

Pork

high proportion of lean to bone and fat
firm, fine textured lean
grayish-pink color
firm white fat on outside
well distributed fat through lean
reddish bones

Veal

firm structure
light pink color
fine grained and velvety
soft, red, porous bones

Lamb

high proportion of lean to bone and fat
firm white outside fat
fine, evenly dispersed flecks of fat
light pink color
soft, red, porous bones

Variety meat

plump
relatively firm texture
fresh, shiny appearance
uniform color

Liver varies in color from a light red in calf liver to a very deep red in pork liver. *Heart* should be a dark red. *Kidneys* are a deep red-brown. *Tongue* color varies from a gray to a red-brown, depending on whether it is fresh, corned, smoked, or pickled.

Variety Meats

Tongue is a muscle. Beef and veal tongues are the ones found most often on the meat counter. Beef tongues weigh from 3 to 5 pounds; veal tongues weigh ½ to 2 pounds. Pork and lamb tongues are usually available ready-to-serve. Plan on three servings per pound ready-to-cook weight. Allow three to four hours to cook a beef tongue.

The other variety meats are organs of the animal.

Heart requires moist heat cookery. Beef heart is the largest and least tender. An average size beef heart will make four to five servings; calf or pork heart, two servings; and lamb heart, one serving.

Liver prices vary widely. Calf liver costs more per pound than beef, and beef more than pork. Calf liver has the most delicate flavor and pork liver the most pronounced flavor.

Brains and *sweetbreads* are very tender, soft in consistency, and delicate in flavor. These are considered delicacies and cost more per pound than the other variety meats.

Kidney requires long, slow moist heat cookery. Allow one to one and one-half hours for cooking.

Sausage Meats

For the homemaker who is looking for quick and easy foods sausage may be the answer and there are more than 100 different varieties to choose from. Many of these are relatively inexpensive "buy a pound—serve a pound" meats which may be served hot or cold, alone or in combination with other foods.

What is sausage? While it is usually thought of as fresh ground pork, any meat that has been ground or chopped is called sausage. Beef, pork, lamb, and veal are usually used. Thinner carcasses, trimmings, and edible by-products are used. The meat used for most varieties is given a light cure, ground or chopped, and mixed with different spices for flavor.

A binder of corn flour, potato flour, rice flour, crackers, or dry skim milk is used to hold the sausage together, improve texture, and absorb water. Sausage made under government inspection can have up to 3.5 per cent binder.

Chipped ice is also added to most sausage to prevent "heating." The limit on this under government inspection is 3 per cent for uncooked sausage and up to 10 per cent for cooked sausage.

After it is made, the sausage is stuffed into natural or artificial casings. The natural casing is eaten, while the artificial kind is peeled off after processing. Fresh, cooked, and dry sausages are the three major types available.

Fresh sausages made of uncured meat have not been cooked when purchased. They usually are not smoked. Keep this kind, as any fresh meat—covered in the refrigerator. Pork sausage and hamburger are the most popular of this kind. These need to be cooked before eating.

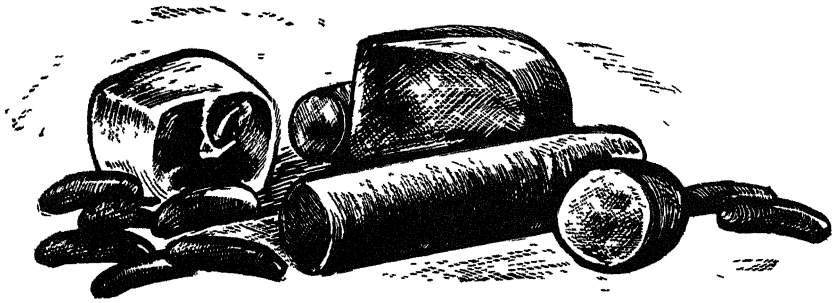
Cooked sausages are made of lightly cured meat and are cooked, and usually smoked. The frankfurter and bologna are the most popular of these. They can be cooked or eaten as purchased.

Dry sausages are mostly made of cured beef and pork. Most are cooked, some are smoked, and all are dried to some extent. Thus, their keeping quality is excellent. Salami, cervelat, thuringer, and pepperoni are examples of this kind.

The three best guides to quality when buying sausages are:

- Federal Inspection Stamp
- label
- brand

The Federal Inspection Stamp shows the sausage has been made of wholesome food under sanitary conditions. The label gives a list of ingredients in descending order of amounts, the name and address of the manufacturer, and the weight of the package. The brand name signifies consistent quality by the manufacturer.



Influences on Price

Beef—The marketing of beef cattle generally follows a seasonal pattern. Normally, a larger number of cattle go to market in the fall and winter, and a smaller number in spring and early summer. Cattle are marketed at all ages and at all degrees of finish. Because of this, supplies of the various grades may vary independently from the total supply of beef.

Some of the cattle marketed in the fall are "grass-fed." "Grain-fed" cattle are usually started on feed in the fall. Since the length of time on feed influences quality, the peak marketings are later for the progressively higher grades. So, beef slaughtered in the fall and winter is made up of a higher percentage of the lower grades than that slaughtered in the spring and summer.

Prices of the various grades of beef are related to supply and demand. When there is a larger supply of a particular grade of beef, the price is normally lower than at other times of the year. For example, the prices of "U.S. Standard" grade beef tend to be lowest in the fall while "U. S. Prime" prices may be low in June or July when the supply of this grade is largest. The same holds true for brands indicating quality.

Pork—There are two distinct seasons in normal years when the supply of pork is plentiful. Larger pork supplies and lower prices usually occur in the fall and early winter. Smaller supplies and higher prices usually occur in July. Generally there is an inverse relationship between supply and price. When supplies are larger, prices usually are lower.

Seasonal price changes are much sharper for fresh than for cured pork products. Cuts that are in greater demand bring a higher price than the less demanded cuts. Demand varies with temperature, special holidays, and the season of the year. For example, pork chops and spare ribs are in greater demand than roasts during the summer months.

Veal—Veal is the meat from calves, usually less than 3 months of age. Veal is a product of the dairy industry, and, for the most part, the calves have been milk-fed. The largest supply of high quality veal is available in late summer and early fall. At this time, prices for this meat are generally at their low point in the retail store. Prices are highest in January and February when supplies of veal are at the low point of the year.

Lamb—Lamb is the meat from sheep less than 12 months old. It is different from mutton in that it's younger, and is milder in flavor. "Spring lamb" refers to a lamb that has been born in the spring and is marketed during the same year. August and early September mark the beginning of the normal volume marketing season for lamb (but the period of greatest supply is usually from December through March. This is the time of lowest prices for most cuts, too. Then prices rise in April and May, and for most cuts, reach a peak in June. Due to low volume demand, many markets do not have lamb available all of the time.

Quantity to Buy

Careful planning can eliminate many problems with left-over meat. You can determine the size of cut you need if you know how many servings to expect from one pound of meat.

Cost is another reason for knowing number of servings per pound of meat. Retail prices of different kinds and cuts of meat vary greatly. And so does the amount of edible meat they provide per retail pound. Some cuts contain relatively large amounts of bone, fat, and connective tissue, while other cuts are nearly all meat. These differences in amount of edible meat affect the actual cost per serving to a great extent.

How can cost per serving be determined? You need to know:

- price per pound of various cuts of meat
- estimate of number of servings per pound
- how to do simple division.

For example, suppose you are deciding on which meat to choose for Sunday dinner. The choices include:

spare ribs @ 59¢ per pound
chuck roast, bone-in, @ 69¢ per pound
leg of lamb @ 79¢ per pound
boneless fully-cooked ham @ 99¢ per pound

Using the table on page 21 as a guide, you note that spare ribs will give 1-1/3 servings per pound; chuck roast, 2 servings; leg of lamb, 3 servings; and boneless, fully-cooked ham, 5 servings. So, dividing price per pound by number of servings per pound, you find that:

spare ribs @ 59¢ ÷ 1-1/3 servings = 44.4¢ per serving
chuck roast @ 69¢ ÷ 2 servings = 34.5¢ per serving
leg of lamb @ 79¢ ÷ 3 servings = 26.3¢ per serving
boneless ham @ 99¢ ÷ 5 servings = 19.8¢ per serving

What does this mean? First, it shows the kind of cost comparisons that can be made between meat, poultry, and other main dish items. You may be surprised when you make actual cost-per-serving comparisons between various cuts or kinds of meat. Some items that are priced relatively high per pound may really be economical choices. And some that appear low in price, may be relatively high on the same basis. The retail price per pound divided by the number of servings tells the story. However,

Average Number of Servings From One Pound of Different Retail Cuts of Meat and Poultry*

Meat Cut	Servings Per Pound	Meat Cut	Servings Per Pound
Beef		**Pork, Fresh**	
Sirloin steak	2½	Center cut or rib chops	4
Porterhouse, T-bone,		Loin or rib roasts	2½
Rib steak	2	Ham roast	2½
Round steak	3½	Boston butt, bone-in	3
Flank steak	4	Boston butt, boneless	4
Chuck steak	2	Blade steak	3
Chuck roast, bone-in	2	Spareribs	1-1/3
Rib roast, boneless	2½	Liver	5
Chuck roast, boneless	3		
Rib roast, bone-in	2		
Rump roast, Sirloin roast	3	**Pork, Cured**	
Ground beef	4	Picnic:	
Short ribs	2	bone-in	2
Heart, liver or kidney	5	boneless	3
Tongue	3	canned	5
Frankfurters	4	center slice	3
Stew meat, boneless	5	Ham, ready-to-eat:	
Dried, chipped	8	bone-in	3½
Lamb		boneless	5
Loin, rib or shoulder		shankless	4¼
chops	3	center slice	5
Breast and shank	2	Ham, cook-before-eating:	
Shoulder roast	2½	bone-in	2½
Leg of lamb	3	boneless	3½
Stew meat, boneless	5	shankless	3

*From 2½ to 3½ ounces of cooked, lean meat is considered a standard serving.

Source: *Cost Per Serving*, Cornell University Extension Food Marketing Handbook.

remember that the price relationships between the different kinds and cuts of meat change often. So comparisons must also be made frequently. After you get used to doing such comparisons, it comes easy. Practice with the newspaper ads. You'll soon find yourself automatically figuring cost-per-serving at the meat counter, as well as elsewhere in the store.

Care of Meat

In the Refrigerator

Care of meat after purchase is important in maintaining quality and flavor. Remove the store wrapper from fresh meat and then loosely wrap with wax paper. Keep fresh meat in the coldest part of the refrigerator. It should be used within a few days. Variety meats are especially perishable and should not be kept longer than two days. Freshly ground meat—as ground beef or fresh sausage—should be held only one or two days.

Sausage meats, such as frankfurters, bologna, and dried sausages, keep better than fresh meat, but will deteriorate and change flavor if held more than one to two weeks.

Cured pork cuts will keep longer than fresh pork, but if held too long, the fat will become rancid. Bacon and the fully cooked and cook-before-eating hams require refrigeration. So do canned hams. Long-cured hams can be stored without refrigeration but length of time depends on the cure.

Cooked meat, broth, and gravies should be covered tightly, and then stored in the refrigerator within two hours after cooking. It is safe to refrigerate them immediately. Use these items within one or two days as they are very perishable.

In the Freezer

Freezer storage provides a means for keeping meat for longer periods of time. However, the time varies with the kind of freezer storage available and the kind of meat.

Any meat to be frozen should be packaged in moisture-vapor proof material. This does not include the store wrapper, but rather materials such as heavy-duty foil or coated freezer paper.

No meat should be kept in the ice-cube compartment of the refrigerator longer than one week. The temperature does not get as low as 0°F., which is the temperature at which any frozen food must be stored to maintain quality.

The home freezer, or locker, on the other hand, will hold frozen foods at 0°F. or below. For good keeping quality, meat must be frozen quickly.

Fresh beef that has been properly wrapped, can be held in the freezer at 0°F. up to one year. After that time, eating quality will decline.

Fresh pork, on the other hand, should be stored no longer than 3 to 6 months at 0°F. After that the fat may become rancid and other flavor changes may develop, and there may be loss of weight. Cured and smoked pork cannot be stored in the freezer as successfully as fresh pork. Special care in wrapping is important so that smoked odors do not penetrate other foods in the freezer. Fresh sausage may be stored at 0°F. or lower for 1 to 3 months. Salt should not be added before freezing because it quickens the development of rancidity.

Lamb and veal both can be stored successfully in the freezer at 0°F. for up to one year.

Frozen cuts of meat may be thawed in the refrigerator, at room temperature, or during cooking, if the cooking time is increased. No method of thawing frozen cuts has been found to be superior.

Meat Cookery

Tender juicy meat with well developed flavor is the desired result of meat cookery. Meat not only looks better, but has more taste appeal when cooked. Cooking makes meat safe to eat by destroying harmful organisms. For example, fresh pork must be cooked to a minimum internal temperature of 137°F. to kill trichinae organisms, if present. Nutrients and flavor should be conserved as completely as possible. In most cookery methods, flavor is developed.

The basic methods of meat cookery are (1) dry heat (2) moist heat and (3) frying. The method used depends upon the cut of meat and its quality. In general, tender cuts of meat are cooked by dry heat because they contain little connective tissue. Moist heat is required to make tender those cuts which contain much connective tissue. Some thin cuts of meat, some breaded cuts and some dishes using cooked meat are prepared by frying. Regardless of the method used, moderate temperatures are recommended because they result in more uniformly cooked meat and in less loss of weight, nutrients and palatability. The lower temperature means a longer cooking time but this sometimes increases tenderness. Time available for cooking not only influences the choice of meat, but it may influence the choice of the cooking method.

Dry Heat Cookery

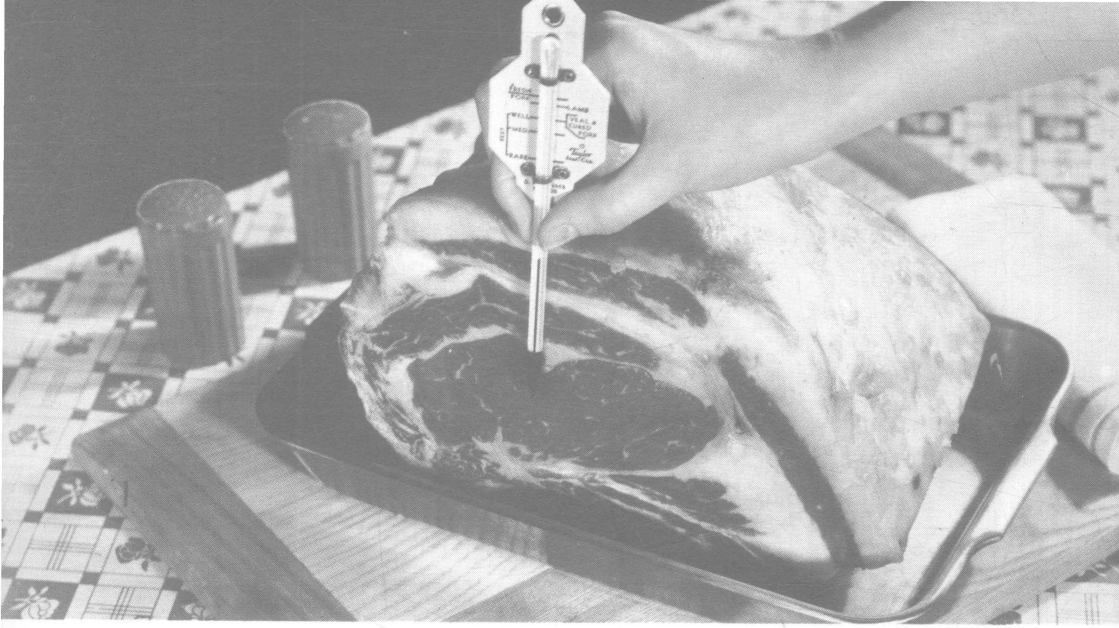
Roasting, broiling, and pan broiling are the methods of dry heat cookery used in preparing meat. The following information is a basic guide to preparation of meat by these methods.

Roasting

"Roasting" is a term that applies to meat cookery in an oven; it is synonymous with "baking". "Baking" of meat is commonly applied to ham.

The principles of roasting are as follows:

- The cut of meat and the quality must be suitable for roasting. Some of these cuts are:
  Beef—Standing or rolled rib; high quality top round; (sirloin tip and rump cuts only if from young animals) tenderloin; meat loaf
  Veal—Leg, loin, shoulder
  Lamb—Loin, leg, shoulder, rack
  Pork—Fresh and smoked hams and shoulders, loin, spareribs
- Frozen cuts may be thawed before roasting or by increasing total cooking time when starting with a frozen cut.
- A moderately low oven temperature is desirable — 300°F. for beef, veal, lamb, and cured pork; 350°F. for fresh pork.
- Searing is not necessary. If done, cooking losses may be increased because of high temperatures.
- Meat should be roasted fat side up in a shallow pan 1-3 inches deep. Unless the cut of meat has bones, as in a rib roast that form a natural rack, lay the meat on a roasting rack or ordinary cake rack.
- It is best not to add water or cover the roast. In general, cooking losses are less when uncovered than when covered.
- A timetable serves as a guide to total cooking time. Timetables give an estimate only, because oven temperatures and degree of doneness desired vary. The rate of heat penetration is influenced by shape and size of the roast, amount of fat, amount of aging, and bone content. If meat has been treated by the processor to increase tenderness follow directions on the package for time and temperature.
- Salt may be added before or after cooking.



- A meat thermometer should be used to determine when meat is ready to serve. Insert the meat thermometer into the thickest part of the roast so that the bulb is centered in the largest muscle. It should not rest on bone or fat. The temperature of a roast will continue to rise after removing from the oven.

Look for these characteristics of well roasted meats.

Beef:

Rare: Exterior well browned; the cut slice will be uniform rose-red with a narrow layer of gray at the edge.

Medium done: Attractive brown exterior, juice light in color, slice light pink with a deeper layer of gray than in rare meat.

Well done: Exterior brown; slice, grayish brown; colorless or yellow juice.

Veal: Reddish-brown, even color on the exterior. The roast should be firm, though tender. A cut slice should be grayish white, and the roast should be juicy enough for juice to run on the platter.

Pork: Uniform brown, crisp crust; cut slice grayish white; no tinge of pink; firm; juicy; tender.

Lamb: Exterior golden brown and crisp; plump and juicy; slice brown throughout; tender. This meat should always be served either piping hot or chilled, never lukewarm because the texture of the fat is more palatable.

Approximate Roasting Time and Temperature for Some Typical Cuts**

Cut	Weight in Pounds	Oven Temp. in Degrees F.	Interior Temp. in Degrees F.	Time Per Pound in Minutes
Beef				
Standing rib	5 to 8	300	140	18 to 20
			145 to 158	22 to 25
			160 to 165	25 to 27
Rolled rib	5 to 8	300	140	30 to 32
			145 to 158	33 to 38
			160 to 165	45 to 48
Pork (fresh)				
Loin	3 to 4	350	185	35 to 45
Ham	10 to 12	350	185	30 to 35
Shoulder	5	350	185	35 to 40
Pork (regular cured)*				
Whole ham	10 to 12	300	165 to 170	25
Half ham	5 to 6	300	165 to 170	30
Cottage butt	3	300	165 to 170	35
Picnic	4 to 8	300	165 to 170	35
Lamb				
Leg	6 to 7	300	165 to 180	30 to 35
Shoulder (cushion)	3 to 4	300	165 to 180	30 to 35
Rolled shoulder	3 to 4	300	165 to 180	40 to 45
Veal				
Leg	7 to 8	300	165 to 170	25
Loin	4 to 5	300	165 to 170	30 to 35
Rib	2 to 3	300	165 to 170	30 to 35

*Follow direction on labels for "fully-cooked" or "cook-before-eating" hams. American Meat Institute recommends cooking "cook-before-eating" hams and picnics to an internal temperature of 160°F. An internal temperature of 125-130°F. is recommended for "fully-cooked" hams and picnics. This lower temperature will require about two-thirds to three-fourths as much time as regular cured ham.

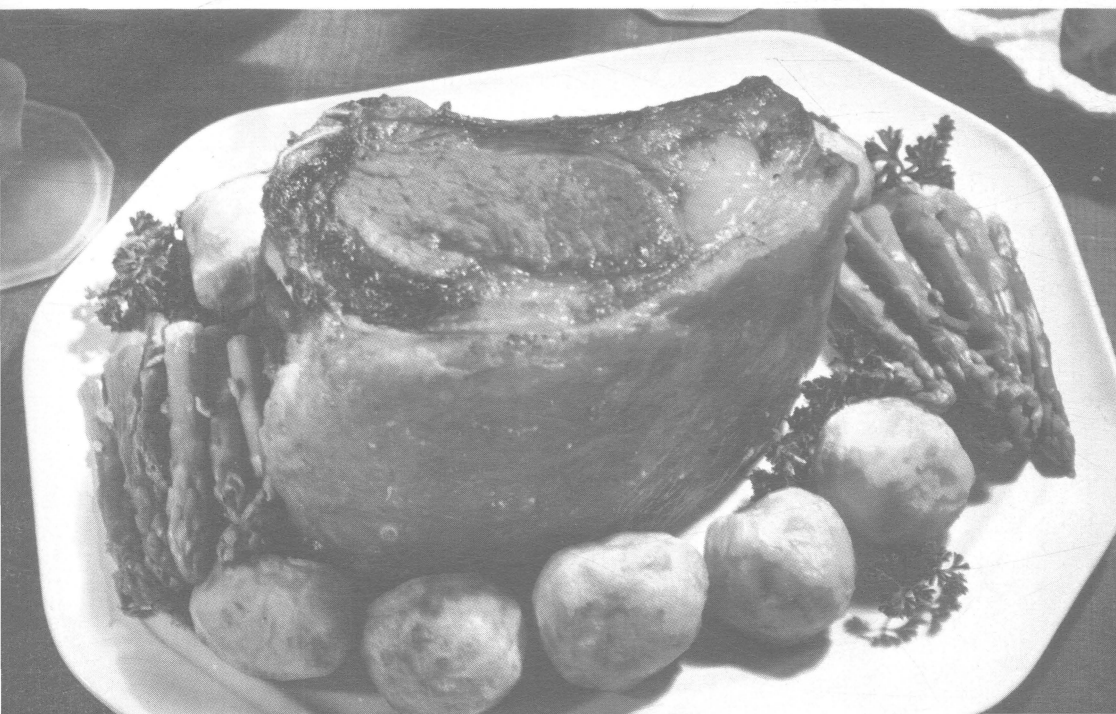
**Adapted from Hughes, Osee, *Introductory Foods*, copyright 1962 by the Macmillan Company and used with their permission.

Aluminum Foil in Roasting and Rotisserie Roasting

Meat is sometimes wrapped in foil or a parchment type paper before cooking. The wrap helps to retain moisture so this cookery method is not, in fact, roasting, a dry heat method of cookery.

Recent research indicates there is no distinct advantage in cooking ham or beef in aluminum foil. The results of the study showed these disadvantages in the use of foil for roasting meats: Increased weight loss due to cooking, greater fuel consumption and steamed flavor. Aluminum foil acted as an insulator equivalent to lowering the oven temperature approximately 75°F.

Results of rotisserie roasting over a gas top-of-range type or on an electric unit built into the oven have been reported. Cooking time for boneless rolled rib roasts and boneless pork loin roasts in the rotisseries was consistently 1/4 to 1/3 shorter than oven-roasting time. The temperature proposed for electric oven rotisserie roasting of pork is 300-325°F. or "medium" or "medium hot" for gas top-of-range rotisserie. The gas rotisserie required 1/4 to 1/2 longer total cooking time than the electric rotisserie in the research reported. Rotisserie roasting of beef in the electric unit was best done at 325°F. Much of the surface fat was rendered from the rotisserie cooked meat, leaving a pleasing brown surface. Cooked meat yield by this method was less than for oven roasting. Difference in cooking method by oven or rotisserie had little effect on eating quality.



Approximate Broiling Time for Some Typical Cuts**

Temperature 350°F.

Cut	Average Weight in Pounds	Time in Minutes		
		Rare	Medium	Well-done
Beef				
Club steak				
1 inch	1	15 to 18	20	22 to 25
1½ inch	1¼	25 to 27	30	32 to 35
Porterhouse				
1 inch	2	20 to 22	25	30
1½ inch	2½	30 to 32	35	40
Sirloin				
1 inch	3	20 to 22	25	30
1½ inch	4½	30 to 32	35	40
Ground beef patty				
1 inch thick by				
3½ inch diameter	¼	15 to 18	25	28 to 30
Lamb				
Loin chop				
1 inch	3/16	—	12 to 15	18
1½ inch	5/16	—	18	20
Rib chop				
1 inch	⅛	—	12 to 15	18
1½ inch	¼	—	18	20
Ground lamb patty				
1 inch thick by				
3½ inch diameter	¼	—	18 to 20	22
Pork				
Regular cured ham				
½ inch slice	¾ to 1	—	—	20 to 22
1 inch slice	1½ to 2	—	—	25 to 30
Fresh loin or				
Rib chops*				
1 inch	¼	—	—	18 to 20

*Cook fresh pork until well done. 137°F. is the minimum internal temperature for control of trichina.

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Broiling

Broiling involves cooking by direct heat from a gas flame, electric element or over hot coals.

The principles of broiling are as follows:

- The cut of meat, its quality and thickness must be suitable for broiling. Some of these cuts are:
  Beef—High quality sirloin, porterhouse, club, rib, T-bone, tenderloin steaks at least 3/4 inch thick, and ground beef patties.
  Lamb—shoulder, rib, loin chops, leg steaks, liver and ground lamb patties.
  Pork—ham slice, bacon, sausage. Pork chops may be broiled if cooked until internal temperature reaches at least 137°F.
  Veal—Do not broil veal cuts except liver because the lack of fat and much connective tissue on veal cuts yields a poor product when broiled.
- It is wise to consult the instruction book for your particular range or broiler. Instructions are developed for use of the broiler based upon different engineering designs. What is applicable for one broiler unit may not be for another.
- To prevent excessive shrinkage, burning of the exterior of the meat, and excessive spattering, a temperature of 350° at the surface of the meat should be used. This temperature may be possible by —
  (a) regulating the distance the meat is placed from the heat source
  (b) using special thermostat settings to vary the heat according to instruction books with broilers, particularly if the broiler is new.
  (c) correctly using your broiler as directed by a local home economist.
- Rub broiler rack with unsalted fat to prevent sticking. Arrange food on the rack.
- Lean dry meat may be brushed with oil or softened shortening.
- The broiler rack must be placed under the heat. Generally steaks and chops broil best 4 to 5 inches from the heat.
- The door of a gas range is usually left shut during broiling while the door of an electric range is partially open. (Consult your instruction book).

- For best results broil meats on the first side a little more than half the total cooking time before turning. Season meat after it has broiled.
- The chart on page 28 can serve as a guide for total broiling time.
- Turn broiler meats with tongs or spatula to prevent escape of juice.
- To test for doneness use a sharp knife and cut into the center of the steak or chop next to the bone; look for color indication of rare, medium or well done meats. A meat thermometer may be used with care in thicker steaks to indicate degree of doneness. 100°F. for rare to medium, 135°F. for medium to well done.
- Broiled meats should be served immediately on a hot platter.

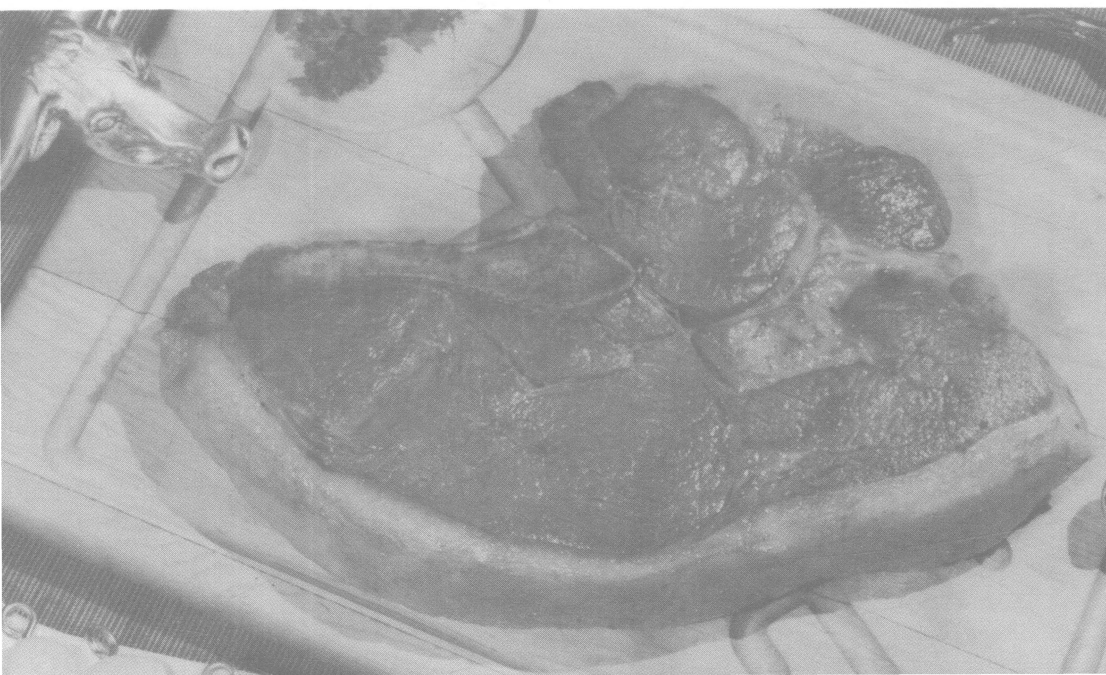
Look for these characteristics of well-broiled meats.

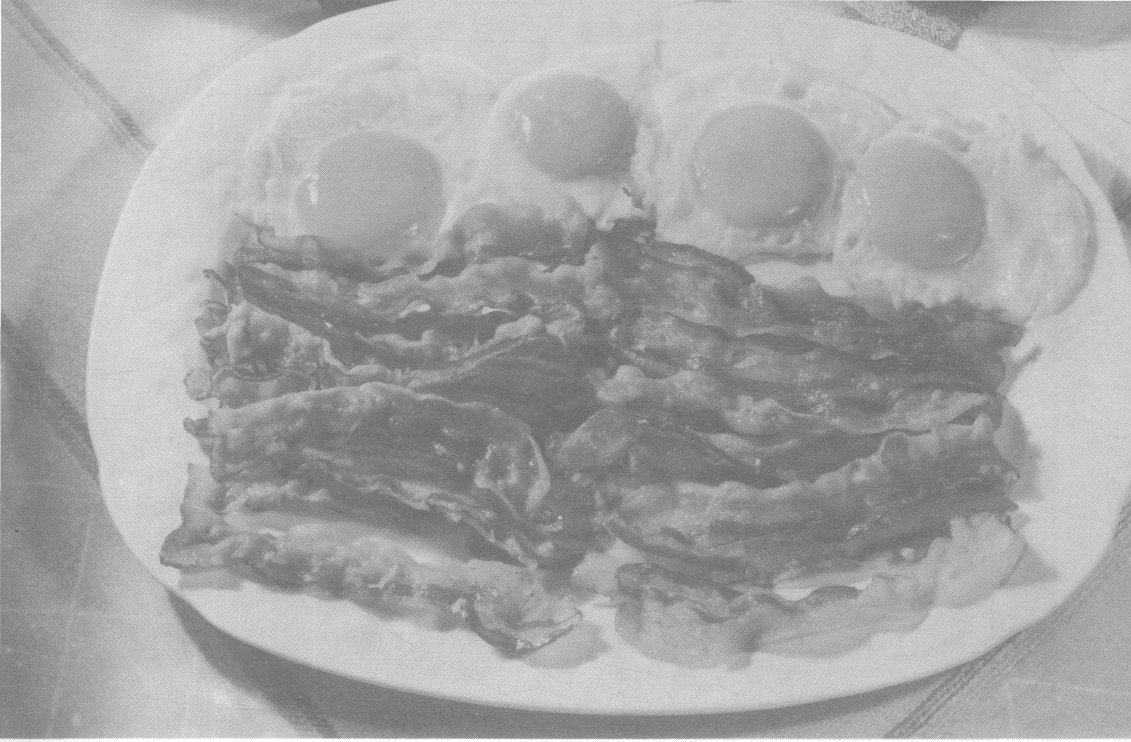
Beef Steak:

Rare—Exterior even brown with thin grayish-brown layer underneath; puffy and full steak; tender; interior uniformly rosy red.

Medium—Exterior even brown; no charring of bone or fat; light pink interior; plump steak.

Well-done—Exterior even brown, appear shrunken; interior brownish-gray; little juice.





Bacon: Crisp but not brittle; fat clear with no white spots.
Ham: Exterior delicate brown; fat golden brown; interior pink; juicy; and tender.

Lamb Chops or Steaks:
Medium—Exterior evenly browned; gold brown fat; juicy; interior, grayish-brown with tinge of pink.
Well-done—Exterior same as above, but interior uniform grayish-brown.

Pan Broiling

This method is a variation of broiling in that heat is applied by means of contact with hot metal. A heavy frying pan should be used and preheated before adding the meat. Cuts suitable for broiling can also be pan-broiled.

Steaks and chops cut too thin to broil satisfactorily may usually be pan broiled. Pork chops can be pan broiled satisfactorily if enough cooking time is allowed to cook them well done. If ground meats are to be pan broiled, rub the pan first with fat.

Heat the frying pan and maintain moderate heat during the cooking. Turn the meat as often as necessary. Pour off fat as it accumulates. Do not cover the pan nor add water. Test for

doneness using a sharp knife. Cut a small gash close to the bone near the end of the cooking period; look for color indication of rare, medium or well done meats. Pan broiling of bacon is most satisfactorily done when the bacon is started in a cold frying pan and heated slowly.

Moist Heat Cookery

Those cuts of meat which have much connective tissue or are from lower quality animals can be cooked best by moist heat. This method softens the protein, collagen, in the connective tissue and develops a desirable flavor. The basic principles of moist heat cookery as they apply to braising and cooking in liquid are described below:

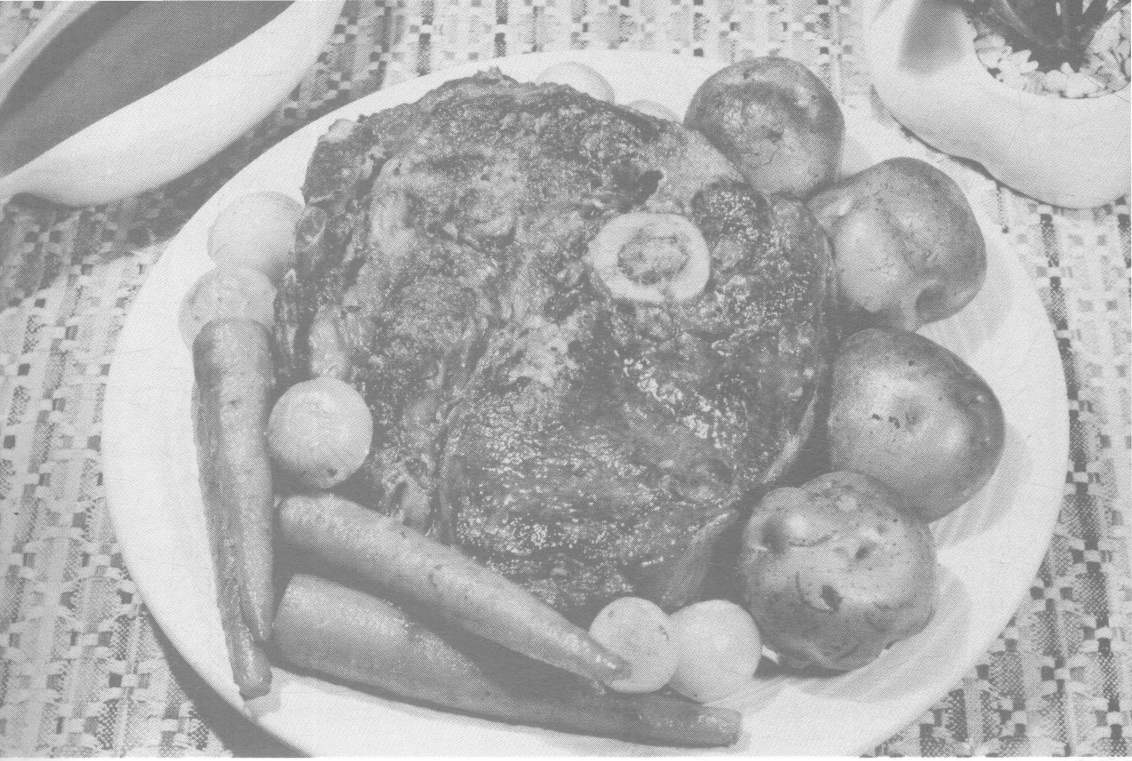
Braising

Moist and dry heat methods are combined. The meat is first browned uniformly by dry heat, either pan-broiling or baking or pan frying. The meat may or may not be floured. A small amount of liquid is added, the pan or kettle tightly covered and the meat allowed to steam for a long period of time as the liquid simmers but does not boil.

The following cuts may be cooked by braising, some as pot roasts, others as steaks (swiss steak, or breaded chops, etc.)

Cuts Cooked by Braising

Beef	Pork	Lamb	Veal
Neck	Rib chops	Breast	Breast
Fore shank	Loin chops	Neck slices	Steak
Chuck	Shoulder steaks	Shank	Rib chops
Brisket	Tenderloin	Shoulder	Loin chops
Plate	Steaks from leg	Shoulder chops	Shoulder chops
Short ribs	Heart	Heart	Shoulder
Flank steak	Liver	Kidney	Cuts from leg
Heel of round	Kidney	Liver	Heart
Round steak			Kidney
Rump			Liver
Oxtails			
Heart			
Kidney			
Liver			



Results of recent research reported by the United States Department of Agriculture show the following to be true regarding treatment of beef cuts before braising well-done: vinegar is ineffective as a tenderizer; enzyme applications to the surface of the meat increase tenderness at a possible sacrifice of juiciness and flavor, and pounding meat may increase tenderness slightly. Commercial meat tenderizers are enzymes and if used, should be used according to manufacturer's directions.

Directions for braising as applied to a pot roast are as follows:

- Brown meat on all sides in a heavy iron or heavy gauge metal skillet or kettle using a small amount of fat.
- Flour meat if greater browning is desired.
- Add herbs or other seasoning, if desired.
- Slip a low rack under the meat.
- Add no more than one cup liquid.
- Cover utensil tightly, reduce the temperature and cook until the meat is tender. Add additional liquid as needed. Allow 3-4 hours total cooking time. Oven braising at 300° has been favored for juiciness and flavor. Pressure saucepan braising has been found to produce more tender beef from very low quality beef cuts than does oven

braising. Thiamine retention in oven braised beef is greater than pressure braising but the reverse is true for riboflavin.

- Plan to use the liquid from braised meats in gravy, sauces or stews because it contains valuable nutrients as well as a desirable flavor.

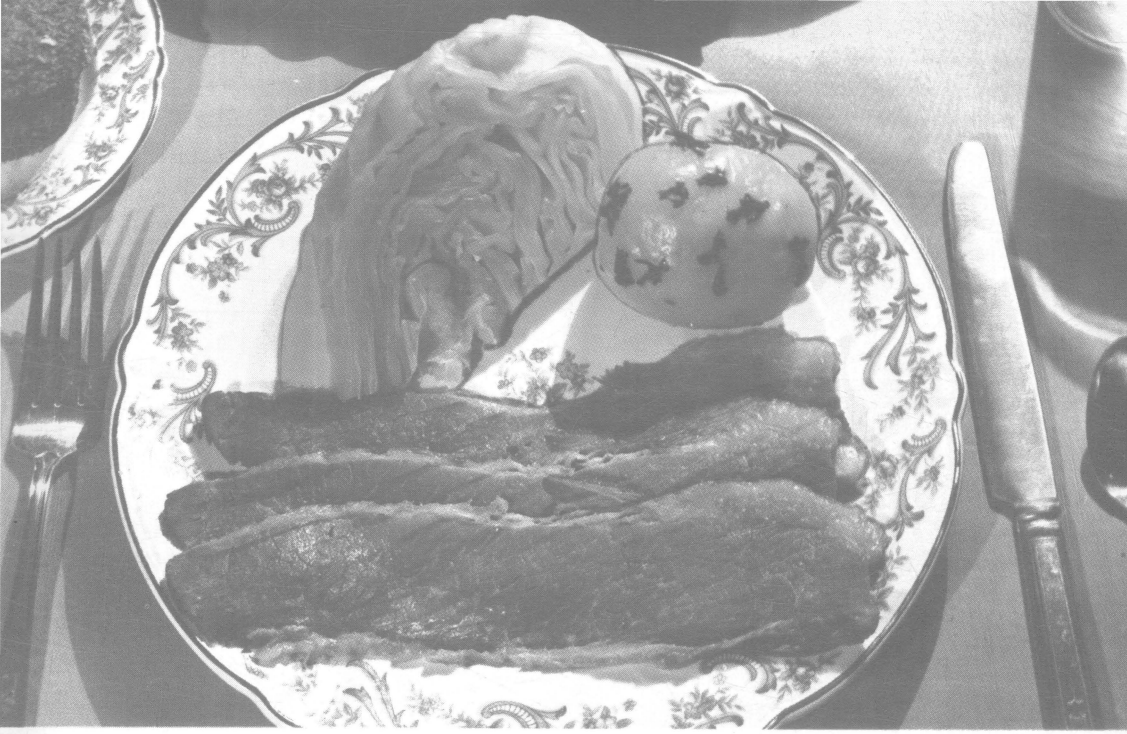
COOKING IN LIQUID

Stews and large pieces of less tender meats can be prepared by simmering until tender. Meats cooked in this way should be tender, juicy, not dry or stringy, and should retain their shape.

Cured pork and beef cuts and variety meat are cooked most often in liquid. For stews, it is possible to utilize thin irregular sections of beef, lamb, and veal which can be cut into 1-2 inch cubes as with the neck section. Other cuts of beef, lamb and veal suggested for braising can be used for stews.

Directions for making a brown stew are as follows:

- Brown meat cubes in hot fat. For light stew, omit this step.
- Season with salt and pepper. Use herbs or spices such as



bay leaf, celery seed or salt, parsley, thyme, marjoram, cloves, peppercorns, or curry powder if desired.

- Add just enough water to cover the meat in a heavy kettle or skillet. Cover with a tight fitting lid and simmer slowly 1½ to 2 hours.
- If vegetables are desired add just long enough before serving to insure their being done.
- Thicken the liquid before serving.

Other cuts cooked in liquid:

Corned beef: Soak if necessary. Cover and cook at a simmering temperature. A 4-6 lb. piece requires 3-4 hours.

Smoked pork: Place the ham, shoulder or spareribs in kettle. Cover with water and simmer until tender. Cover with glaze if desired. These cuts may be allowed to cool in the cooking liquid.

Pan Frying and Deep Fat Frying

Cooking meat in fat is done by two methods. In pan frying, a small amount of fat, ¼ to ½ inch deep in the utensil, is adequate. In deep fat frying, sufficient fat is used to cover the food.

Tender cuts of meat, and thinly cut round steak, veal steak, chops, liver and sometimes pork chops may be pan fried. Cooked

meats such as frankfurters or croquettes which are to be browned in deep fat should be cooked at a temperature of 375-390°F. Raw meat such as veal cutlets, pork tenderloin or liver can be cut into strips ½ inch thick and cooked in deep fat at 350-360°F. Meats to be fried by either method are usually floured or breaded to give a crisply browned exterior.

Accompaniments for Meat

An extra sauce or relish served with the meat helps to enhance the flavor of many meat dishes. The accompaniment used will vary with the kind of meat and the method of cookery. Horseradish sauce is a desirable combination with short ribs or beef cooked in liquid; chili sauce or catsup with pot roast; mint with lamb. If your family enjoys an accompaniment for the meat dish, select one which goes well with the meat.

Meat Carving

Meat carving is an art that is not particularly difficult to master. Carving duties become a pleasure when they are performed with ease and confidence. Different techniques are needed to properly carve the various cuts of meat. The following is an illustrated outline of the carving procedures recommended for some of the common meat cuts.

To add to your skill in carving all cuts of meat follow these principles:

(1) The carving knife must be sharp.

(2) The slices should always be cut across the grain of the meat. Meat sliced in this manner will produce more uniformly tender servings.

(3) Properly cooked meat is more easily carved than poorly prepared meat. An overdone or undone roast is difficult to carve. Removing the roast from the oven 15-30 minutes before meal time will make carving easier.

(4) The carving platter should be ample size. If the platter is not large enough to accommodate slices, an additional warm platter should be furnished.

(5) The hand holding the fork should never be crossed over the hand doing the carving.

(6) A familiarity with anatomy or bone placement is essential to efficient carving. A little investigation will help to locate the bones.

Standing Rib Roast

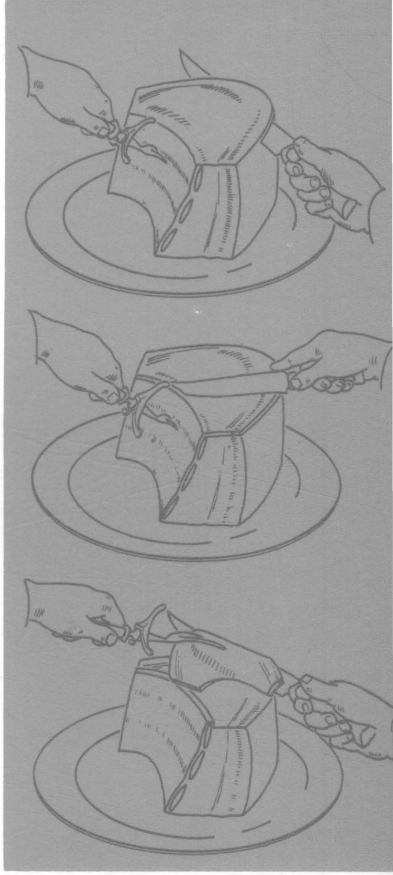
Carving is much easier if the short ribs have been removed and the back bone has been separated from the ribs.

The roast is placed on the platter with the small cut surface up and the rib side to your left.

Insert the fork firmly between the two top ribs. From the far outside edge, slice across the grain toward the ribs. (first illustration). Make the slices an eighth to three-eighths of an inch thick.

Release each slice by cutting close along the rib with the knife tip. (second illustration).

After each cut, lift the slice with the knife blade to the side of the platter. (third illustration).



Blade Pot-Roast

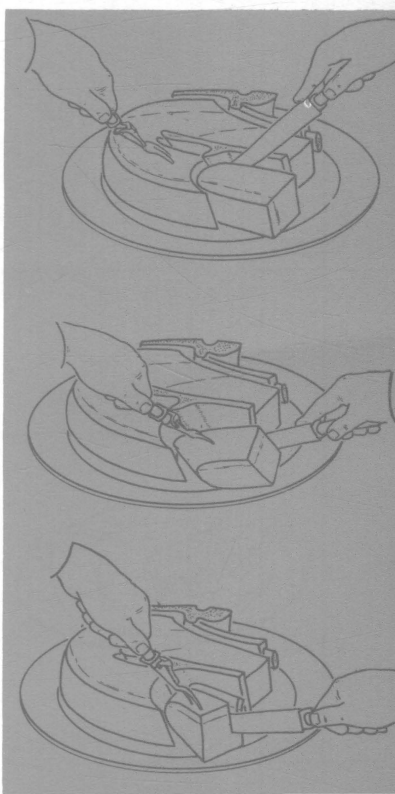
A long cooking process makes it easy to slip the bones away from the meat before the roast is placed on the table.

Hold the pot-roast firmly with the fork inserted at the left and separate a section by running the knife between two muscles, then close to the bone, if the bone has not been removed (first illustration).

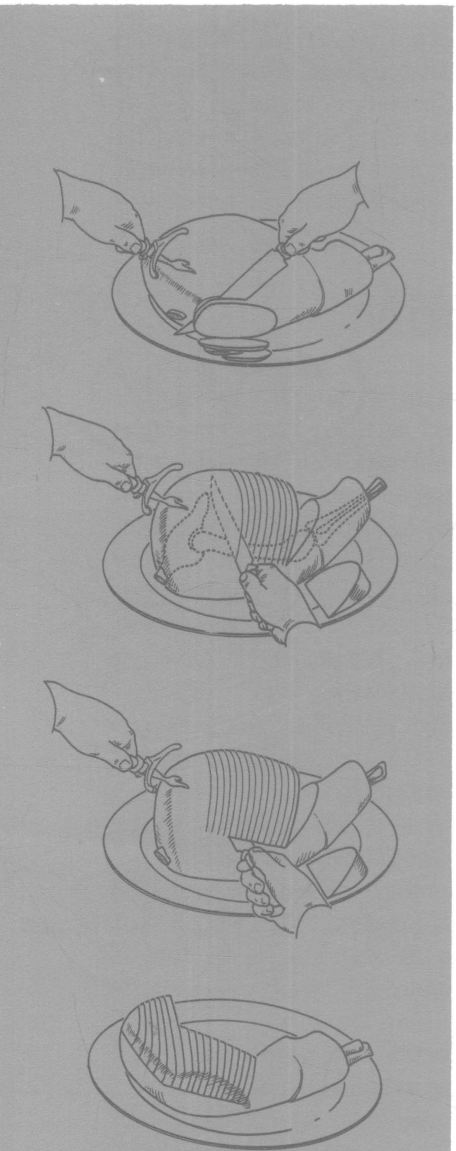
Turn the section just separated so that the grain of the meat is parallel with the platter. (second illustration). This enables you to cut the slices across the grain of the meat.

Holding the piece with the fork, cut slices of one-fourth to three-eighths of an inch thick. (third illustration).

Separate the remaining sections of the roast; note the direction of the meat fibers and carve across the grain.



Baked Whole Ham



Place the ham on the platter with the fat or decorated side up. The shank end should always be to the carver's right. The thin side of the ham, from which the first slices are made, will be nearest or farthest from the carver, depending on whether the ham is from a right or a left side of pork.

The illustrations show a left ham with the first slices cut nearest the carver. The diagram shows the bone structure and direction of the slices.

Insert the fork and cut several slices parallel to the length of the ham on the nearest side. (first illustration).

Turn the ham so that it rests on the surface just cut. Hold the ham firmly with the fork and cut a small wedge from the shank end. (second illustration). By removing this wedge the succeeding slices are easier to cut and to release from the bone.

Keep the fork in place to steady the ham and cut thin slices down to the leg bone. (second illustration).

Release slices by cutting along bone at right angles to slices. (third illustration).

For more servings, turn the ham back to its original position and slice at right angles to the bone. (fourth illustration).

Pork Loin Roast

It is much easier to carve a pork loin roast if the backbone is separated from the ribs. This is done at the market by sawing across the ribs close to the backbone. The backbone becomes loosened during roasting; note in the first illustration that it has fallen away from the ribs.

Before the roast is brought to the table, remove the backbone by cutting between it and the rib ends. (second illustration).

Place the roast on the platter so that the rib side faces you. This makes it easy to follow the rib bones, which are the guides for slicing. Make sure of the slant of the ribs before you carve, as all the ribs are not perpendicular to the platter.

Insert the fork firmly in the top of the roast. Cut close against both sides of each rib. You alternately make one slice with a bone and one without. Roast pork is more tempting when sliced fairly thin. In a small loin each slice may contain a rib; if the loin is large it is possible to cut two boneless slices between ribs.